

7

Mecklenburg Co.

6013Permit1994 - Batch No.____

6013 1994

MEMORANDUM

To: Jan McHargue

Date: December 16, 1994

From: Jim Bateson *JB*

cc: Bobby Lutfy

Subject: N. Mecklenburg C&D Landfill; Hydrogeology.

I have reviewed the responses of Frank B. Hicks Associates, Inc. and ESI, Inc. included in the November 22 package. Some modifications will be needed in their application before a final version can be approved by the Solid Waste Section:

1. Grading limits in the center of the proposed C&D cell still do not allow for a four foot vertical separation between fill and seasonal high groundwater levels. This lack of separation occurs only in the lowermost part of the cell, proposed to be a flat area at 692 feet. Groundwater levels have been measured at 691.86 feet and 688.29 feet in this area. If no estimate of *long term* variation of seasonal high groundwater levels is to be provided, the section will require that grading contours be no lower than 700 feet. In the area of MW-3, this represents a vertical separation of 4 plus 5.14 feet. Maximum variations among readings at MW-2 and MW-6 were 4.41 feet and 8.41 feet, respectively.
2. The top of casing elevation given for MW-2 is less than the corresponding ground elevation indicated by topographic contours. Since groundwater elevations from MW-2 are anomalous, the data should be rechecked. The Section will need a new version of the piezometric surface map, based on corrected groundwater levels, preferably from one of the May sampling events.
3. The Solid waste section does not normally approve monitoring wells with screen intervals greater than 15 feet. Also, monitoring wells should be constructed with the top of the 10 to 15 foot screen just above the seasonal high water table. A new monitoring plan with well construction information needs to be submitted. The operator may choose to monitor the bedrock aquifer in the area near the Council well.
4. The Solid Waste Section will allow the placement of LCID waste within the 500 foot buffer surrounding the well on the adjoining Council property. The Section will not permit the placement of LCID waste within the 200 foot buffer just inside the proposed site boundaries.
5. The Solid Waste Section has recently revised the list of constituents, and their PQL's, required for groundwater monitoring of C&D landfills. The consultants may wish to include the attached list of minimum *Sampling and Analysis Requirements* in their proposed monitoring plan.

-Booklet-

Subject: Hydrogeologic Considerations Response
Nov. 18th 1994

November 18, 1994

Ms. Janis D. McHargue
North Carolina Department of Health,
Environment and Natural Resources
8028 North Point Blvd., Suite 100
Winston-Salem, North Carolina 27106

Subject: Hydrogeologic Considerations Response
(justifications in response to DEHNR November 7, 1994 letter)

Dear Ms. McHargue:

Ecological Services, Inc. (ESI), on behalf of Mr. Larry Griffin, offer the following justifications in response to the noted hydrogeologic considerations outlined in your November 7, 1994 letter.

Long-term seasonal high water table levels -

Upon the submission of the ESI September 1, 1994 Report of Hydrological Assessment Addendum, ESI had compiled groundwater gauging data from February 10, 1994, May 5, 1994, and May 27, 1994. Additional gauging data of select monitoring wells was collected during in-situ permeability testing on November 9, 1994. The compilation of this data represents gauging data collected in the first, second, and fourth quarters of this year. Although gauging data was not collected during the third quarter, ESI considers this period to be a representative trend for seasonal ground water fluctuations. ESI has constructed a hydrograph of depth to water measurements for groundwater monitoring wells MW-7, MW-8, and MW-10 from gauging data collected during the previously mentioned gauging events (Figure 1). In May, wells MW-7 and MW-8 showed an increase in water table recharge which is typical for this time of year. Fourth quarter monitoring (November) indicates a seasonal low for well MW-7. The maximum change in depth to water levels within these wells is 1.65 feet.

In-situ determination of hydraulic conductivity in bedrock -

In order to better characterize the hydraulic conductivity within the bedrock zone at the subject site, ESI conducted a permeability test on monitoring well MW-7. The Bouwer and Rice (1976) Method was used, assuming a partially penetrating screen and a radius which included the sand pack. The hydraulic conductivity calculated for monitoring well MW-7 is $(9.42 \times 10^{-6} \text{ cm/sec})$. Appendix A contains a graph of the in-situ permeability test and the calculations used.

In-situ determination of hydraulic conductivity in partially weathered rock -

In order to better characterize the hydraulic conductivity within the partially weathered rock zone at the subject site, ESI conducted additional permeability tests on monitoring wells MW-9 and MW-10. The Bouwer and Rice (1976) Method was used, assuming a partially penetrating screen and a radius which includes the sand pack. The hydraulic conductivity calculated for monitoring wells MW-9 and MW-10 are $(2.64 \times 10^{-6} \text{ cm/sec})$ and $(7.92 \times 10^{-5} \text{ cm/sec})$ respectively. The higher hydraulic conductivity value calculated for MW-10 is thought to be due to the close proximity of the water holding pond located approximately 20 feet to the west. Considering this additional recharge source, this well could be considered not representative of the in-situ conditions across the remaining portion of the landfill. Appendix A contains graphs of the in-situ permeability tests and the calculations used.

Lithologic logs and well construction data for MW-2, MW-3, MW-4, and MW-5 -

Lithologic logs and well construction data for monitoring wells MW-2, MW-3, MW-4, and MW-5 are included in Appendix B of this letter report.

Monitoring wells MW-2 and MW-3 -

Due to the close proximity of monitoring well MW-2 to the on-site water holding pond (within 5 feet), ESI suggests that the combination of monitoring wells MW-3 and MW-10 be used to monitor groundwater characteristics in the area between the lowest part of the pit and Cane Creek. Although monitoring well MW-2 is intact, it may not present data indicative of groundwater which has moved through the landfill area, due to recharge to the well from the holding pond.

Cross Sections -

All geologic cross sections previously submitted in ESI's September 1, 1994 Report of Hydrogeologic Assessment Addendum were constructed utilizing May 26, 1994 topographic information; therefore, changes to the cross-sections are not warranted.

ESI trusts the information provided will meet the hydrogeologic requirements set forth in the DEHNR November 7, 1994 Technical Review Letter. Please do not hesitate to contact us if you have any questions or require additional information.

Sincerely,
ECOLOGICAL SERVICES, INC.



Paul A. Banks
Project Geologist



Ronald C. Gilkerson
Vice President

FIGURE

	February	May 5th	May 27th	November
MW-7	51.36	50.93	50.91	51.5
MW-8	18.73	18.42	18.92	18.52
MW-9	11.85	12.2	11.01	10.55

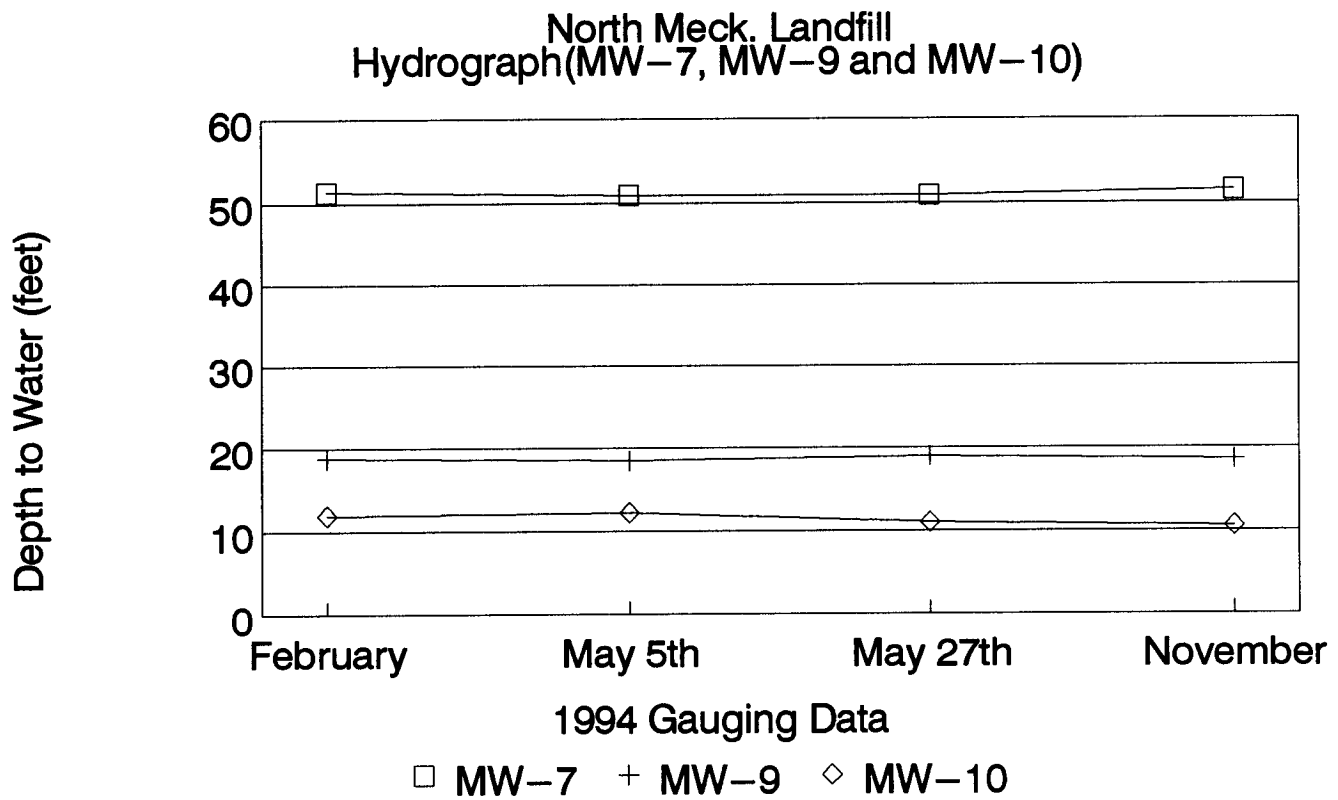


FIGURE 1

APPENDIX A
In-flow Permeability Calculations

BAIL TEST RECOVERY DATA
N. MECK. LANDFILL

MW-7, NOVEMBER 9, 1994

INITIAL DTW: 51.5

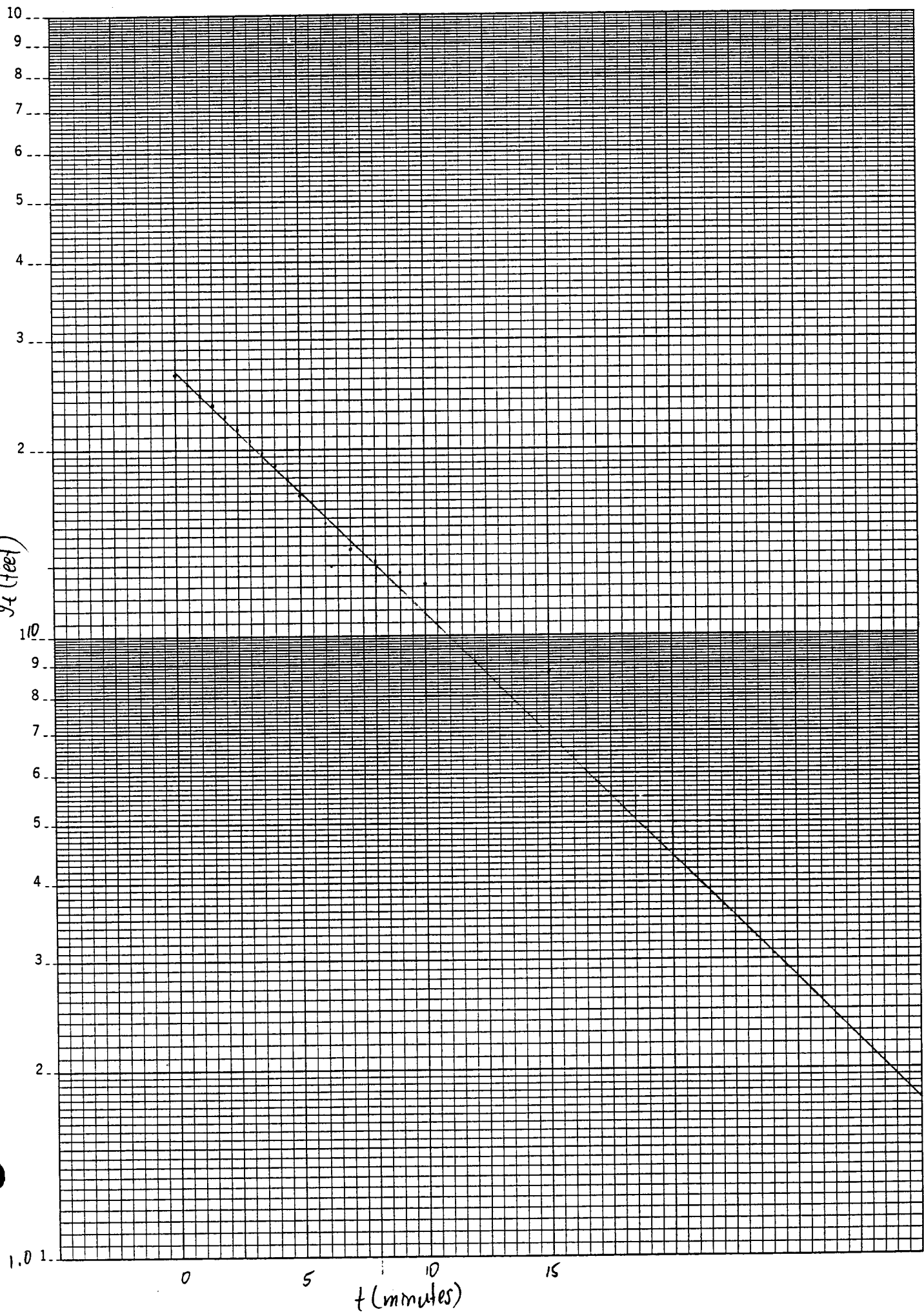
ELAPSED TIME (Min)	DEPTH TO WATER TABLE (feet)	MEASURED W.T. DEPTH MINUS EQUILIBRIUM W.T. DEPTH (feet)
0.00	77.55	26.45
0.25		
0.50	76.64	25.54
0.75		
1.00	75.66	24.56
1.25		
1.50	74.70	23.60
1.75		
2.00	73.85	22.75
2.50	72.87	21.77
3.00	71.98	20.88
3.50	70.89	19.79
4.00	69.91	18.81
4.50	68.97	17.87
5.00	68.01	16.91
5.50		
6.00	66.32	15.22
6.50		
7.00	64.87	13.77
7.50		
8.00	64.30	13.20
8.50		
9.00	63.76	12.66
9.50		
10.00	63.19	12.09
11.00		
12.00		
13.00		
14.00		
15.00	59.81	8.71
16.00		
17.00		
18.00		
19.00		
20.00		
25.00		
30.00		
35.00		
40.00		

MW-7 NOV. 9, 94

46 4970

K&E SEMI-LOGARITHMIC • 2 CYCLES X 70 DIVISIONS
KEUFFEL & ESSER CO. MADE IN U.S.A.

y_1 (feet)



ESI COMPUTATION SHEET

PROJECT TITLE: N. MEER. LANDFILL PROJECT NO. ES675
 DESCRIPTION: IN-FLOW PERMEABILITY TEST MW-7 SHEET OF
 PREPARED BY: DATE: CHK'D BY: DATE:

BROWER AND RICE METHOD

Variables

$$y_t = 13'$$

$$t = 8 \text{ min}$$

$$y_0 = 26.45'$$

$$L = 20'$$

$$r_c = 0.08'$$

$$r_w = 0.25'$$

$$L/r_w = 80$$

$$H = 31.5'$$

$$C = 3.5$$

$$K =$$

Equations:

$$\ln R_e/r_w = \left(\frac{1.1}{\ln(31.5/0.25)} + \frac{3.5}{80} \right)^{-1}$$

$$\ln R_e/r_w = 3.69$$

$$K = \frac{r_c^2 \ln(R_e/r_w)}{2L} \cdot \frac{1}{t} \cdot \ln \frac{y_0}{y_t}$$

$$K = \frac{0.08^2 \ln(3.69)}{40} \cdot \frac{1}{8} \cdot \ln \frac{26.45}{13}$$

$$K = 1.85 \times 10^{-5} \text{ ft/min} = 9.42 \times 10^{-6} \text{ cm/sec.}$$

BAIL TEST RECOVERY DATA
N. MECK. LANDFILL

MW-9, NOVEMBER 9, 1994

INITIAL DTW: 18.58

ELAPSED TIME (Min)	DEPTH TO WATER TABLE (feet)	MEASURED W.T. DEPTH MINUS EQUILIBRIUM W.T. DEPTH (feet)
0.00	23.00	4.42
0.25		
0.50	22.86	4.28
0.75		
1.00	22.75	4.17
1.25		
1.50	22.68	4.10
1.75		
2.00	22.60	4.02
2.50	22.52	3.94
3.00	22.43	3.85
3.50	22.34	3.76
4.00	22.28	3.70
4.50	22.19	3.61
5.00	22.11	3.53
5.50		
6.00	21.98	3.40
6.50		
7.00	21.86	3.28
7.50		
8.00	21.72	3.14
8.50		
9.00	21.59	3.01
9.50		
10.00	21.47	2.89
11.00		
12.00		
13.00		
14.00		
15.00	21.03	2.45
16.00		
17.00		
18.00		
19.00		
20.00	20.56	1.98
25.00		
30.00		
35.00		
40.00		

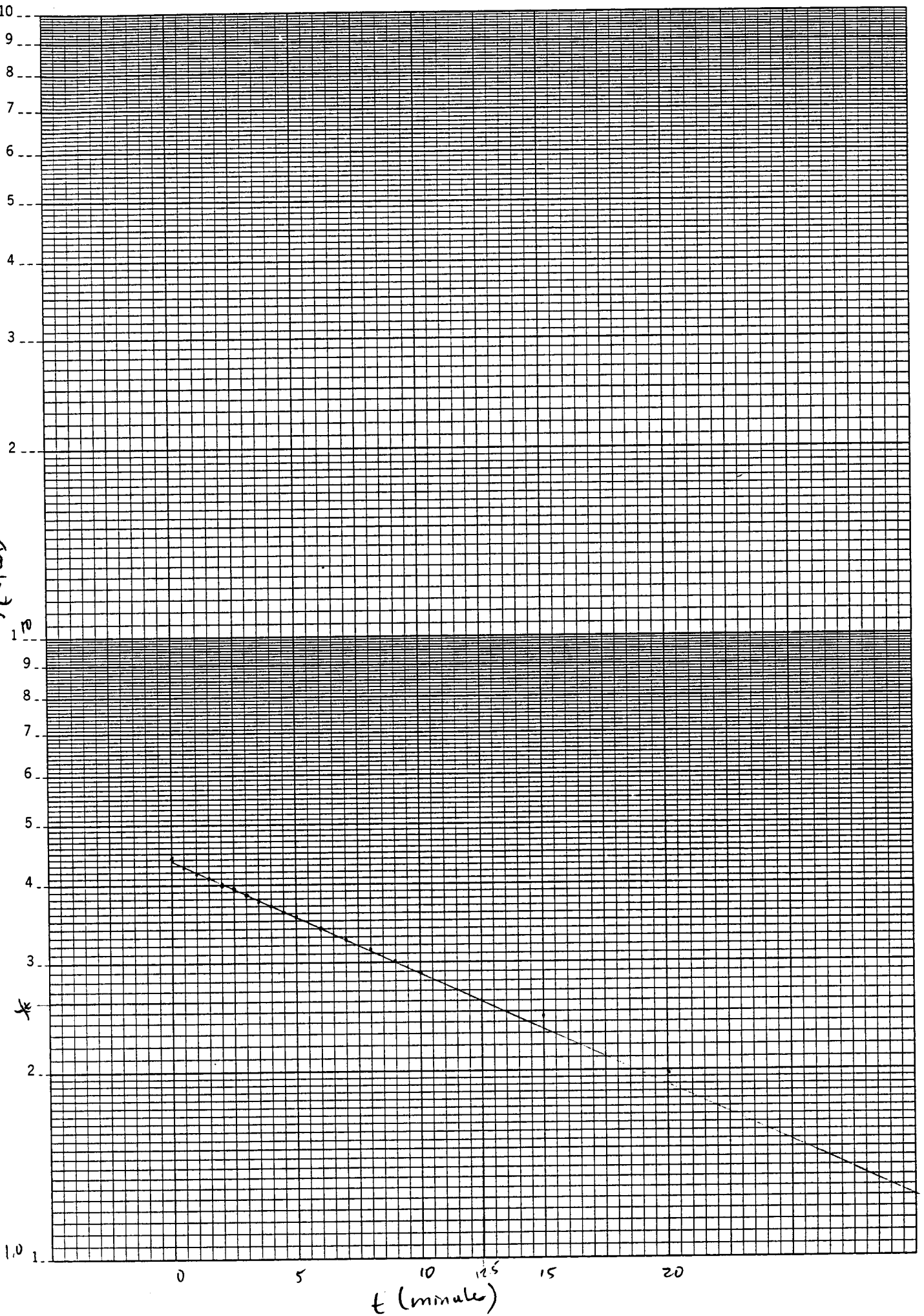
MW-9

NOV. 9, 1994

46 4970

K&E SEMI-LOGARITHMIC #2 CYCLES X 70 DIVISIONS
KEUFFEL & ESSER CO. MADE IN U.S.A.

y_t (feet)



ESI COMPUTATION SHEET

PROJECT TITLE: N. MILL. (AND FILL) PROJECT NO. ES675
 DESCRIPTION: IN-FLOW PERMEABILITY TEST MW-9 SHEET OF
 PREPARED BY: DATE: CHK'D BY: DATE:

BOWEN AND RICE METHOD

Variables

$$y_e = 2.6'$$

$$t = 12.5 \text{ min}$$

$$y_o = 4.42$$

$$L = 20'$$

$$r_c = 0.08'$$

$$r_w = 0.25'$$

$$y_{rw} = 80$$

$$H = 3.42'$$

$$C = 3.5$$

$$k =$$

Equations:

$$\ln R_e/r_w = \left(\frac{1.1}{\ln(3.42/0.25)} + \frac{3.5}{80} \right)^{-1}$$

$$\ln R_e/r_w = 2.15$$

$$k = \frac{r_c^2 \ln(R_e/r_w)}{2L} \cdot \frac{1}{t} \ln \frac{y_o}{y_e}$$

$$k = \frac{0.08^2 \ln(2.15)}{40} \cdot \frac{1}{12.5} \ln \frac{4.42}{2.6}$$

$$k = 5.20 \times 10^{-6} \text{ ft/min} = 2.64 \times 10^{-6} \text{ cm/sec}$$

BAIL TEST RECOVERY DATA
N. MECK. LANDFILL

MW-10, NOVEMBER 9, 1994

INITIAL DTW: 10.55

ELAPSED TIME (Min)	DEPTH TO WATER TABLE (feet)	MEASURED W.T. DEPTH MINUS EQUILIBRIUM W.T. DEPTH (feet)
0.00	17.15	6.60
0.25		
0.50		
0.75		
1.00	15.92	5.37
1.25		
1.50		
1.75		
2.00	14.93	4.38
2.50	13.88	3.33
3.00	12.90	2.35
3.50	12.10	1.55
4.00	11.53	0.98
4.50	11.21	0.66
5.00	10.99	0.44
5.50		
6.00	10.89	0.34
6.50		
7.00	10.83	0.28
7.50		
8.00	10.79	0.24
8.50		
9.00	10.76	0.21
9.50		
10.00	10.72	0.17
11.00		
12.00		
13.00		
14.00		
15.00	10.58	0.03
16.00		
17.00		
18.00		
19.00		
20.00		
25.00		
30.00		
35.00		
40.00		

ESI COMPUTATION SHEET

PROJECT TITLE: N. MECK. LANDFILL PROJECT NO. ES675
 DESCRIPTION: IN FLOW PERMEABILITY TEST MW-10 SHEET OF
 PREPARED BY: DATE: CHK'D BY: DATE:

BOWEN AND RICE METHOD

Variables

$$y_e = 1.25'$$

$$t = 3.75 \text{ min}$$

$$y_0 = 25$$

$$L = 10$$

$$r_e = 0.08$$

$$r_w = 0.25'$$

$$L/r_w = 40$$

$$H = 8.45'$$

$$C = 2.75$$

$$K =$$

Equations:

$$\ln r_e/r_w = \left(\frac{1}{\ln \left(\frac{8.45}{0.25} \right)} + \frac{2.75}{40} \right)^{-1}$$

$$\ln r_e/r_w = 2.62$$

$$K = \frac{r_e^2 \ln (r_e/r_w)}{2L} \cdot \frac{1}{t} \cdot \ln \frac{y_0}{y_e}$$

$$= \frac{0.08^2 \ln (2.62)}{20} \cdot \frac{1}{3.75} \cdot \ln \frac{25}{1.25}$$

$$K = 1.56 \times 10^{-4} \text{ ft/min} = 7.92 \times 10^{-5} \text{ cm/sec}$$

K.E.

46 4970

K.E. SEMI-LOGARITHMIC • 2 CYCLES X 70 DIVISIONS
KEUFFEL & ESSER CO. MADE IN U.S.A.

K.E.

(

(

(

MW-10 NOV. 9, 77

10

9

8

7

6

5

4

3

2

1

0

-1

-2

-3

-4

-5

-6

-7

-8

-9

-10

-11

-12

-13

-14

-15

-16

-17

-18

-19

-20

-21

-22

-23

-24

-25

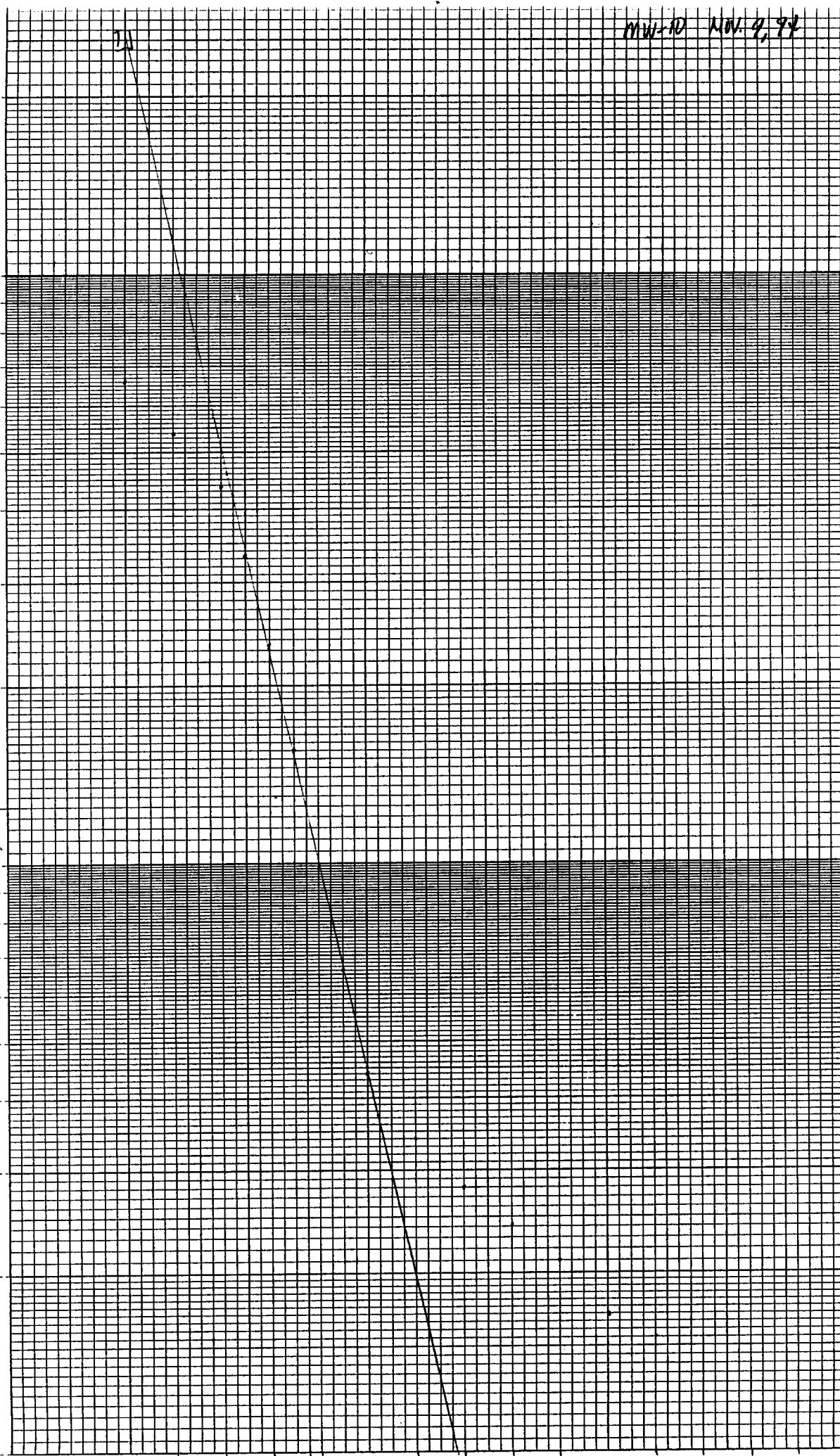
-26

-27

-28

-29

-30



APPENDIX B
Lithologic and Well Construction Data

Geologist Log

Ecological Services, Inc

Job #:	ES-0675	North Mecklenburg Landfill	Well #: MW-2	Page 1 of 1
County:	Mecklenburg	State: NC	Date Begin:	Date End:
Casing Height:	Land Surface Elevation:			
Lat:	Long:	Drilled By: Graham & Currie	Static Water Level:	
Grid Coord:	Logged By: Ben Hope	Development Method:		
Tests:	Drilling Method: Hollow Stem	Sampling Method:		
Grout: 5% bentonite 0 - 4.5 ft		Seal: 4.5 - 7 ft	Gravel Pack: FX 50 sand 7 - 19 ft	
Casing Type:	Sch 40 PVC	Diameter: 2"	Depth: 0 - 9 ft	Hole Dia.: 4"
Screen Type:	Sch 40 PVC	Diameter: 2"	Slot: 0.010-inch	Depth: 9 - 19 ft
			Total Depth: 19 ft	
PID/FID Readings (ppm)	Penetration Resistance	Depth (ft)	Lithology/Remarks	Well Completion
		0	0 - 19.0 ft: Grayish Brown Sandy Fine Sil	0
				Grout (0 - 4.5 ft)
				Bentonite (4.5 - 7 ft)
		10		Casing to 9 ft
				Screen (9 - 19 ft)
		20	Boring Terminated at 19 ft	
		30		
		40		
		50		
		60		

Geologist Log

Ecological Services, Inc

Job #:	ES-0675	North Mecklenburg Landfill	Well #:	MW-3	Page 1 of 1
County:	Mecklenburg	State:	NC	Date Begin:	Date End:
Lat.:	Long.:	Drilled By:	Graham & Currie	Casing Height:	Land Surface Elevation:
Grid Coord.:	Logged By:	Paul Banks	Static Water Level:	Development Method:	
Tests:	Drilling Method:	Hollow Stem	Sampling Method:		
Grout:	5% Bentonite	Seal:	6 - 8 ft	Gravel Pack:	80/20 Silica Sand (8 to 20 ft)
Casing Type:	Diameter:	Depth:	0 - 10 ft	Hole Dia.:	4"
Screen Type:	Diameter:	Slot:	0.010 inch	Depth:	9 - 19 ft
				Total Depth:	20 ft

PID/FID Reading (ppm)	Penetration Resistance	Depth (ft)	Lithology/Remarks	Well Completion
		0		0
		3.0 - 5.0 ft	Brownish Green Fine Grained Sand with Little Silt	Grout (0 - 6 ft)
		8.0 - 10.0 ft	Saprolite: Greenish Brown Fine Grained Silty Sand with Trace Clay	Bentonite (6 to 8 ft)
		10		Casing (0 to 10 ft)
		13.0 - 15.0 ft	Saprolite: Greenish Brown Fine Grained Silty Sand with Trace Clay	
		18.0 - 20.0 ft	Partially Weathered Bedrock: Brown Silty Coarse Sand with Rock Fragments	Sand (8 - 20 ft)
		20	Boring Terminated at 20 ft	Screen (10 to 20 ft)
		30		
		40		
		50		
		60		

Geologist Log

Ecological Services, Inc

Job #: ES-0675		North Mecklenburg Landfill		Well #: MW-4		Page 1 of 1	
County: Mecklenburg		State: NC		Date Begin:		Date End:	
Lat:		Long:		Drilled By: Graham & Currie		Static Water Level:	
Grid Coord:		Logged By: Ben Hope		Development Method:			
Tests:		Drilling Method: Air Rotary		Sampling Method:			
Grout: 5% bentonite		Seal: 40-44 ft		Gravel Pack: FX 50 sand 44-67 ft			
Casing Type: Sch 40 PVC		Diameter: 2"		Depth: 0 - 47 ft		Hole Dia.: 6"	
Screen Type: Sch 40 PVC		Diameter: 2"		Slot: 0.010-inch		Depth: 47-67 ft	
						Total Depth: 67 ft	
PID/FID Reading (ppm)	Penetration Resistance	Depth (ft)	Lithology/Remarks	Well Completion			
		0	0 - 30.0 ft: Tan Silty Fine Sand	0			
		10		10			
		20		20			
		30	30.0 - 40.0 ft: Brown Silty Fine Sand	30			
		40	40.0 - 50.0 ft: Partially Weathered Bedrock Sampled as Tan Silty Fine Medium Sand with Rock Fragments	40			
					Grout (0 - 40 ft)		
					Bentonite (40 - 44 ft)		
					Casing to 47 ft		
		50	50.0 - 67.0 ft: Gray Silty Medium Sand with Rock Fragments	50			
		60		60			
					Sand (44 - 67 ft)		
			Boring Terminated at 67.0 ft		Screen (47 - 67 ft)		
		70		70			

Geologist Log

Ecological Services, Inc

Job #:	ES-0675	North Mecklenburg Landfill	Well #: MW-5	Page 1 of 2
County:	Mecklenburg	State: NC	Date Begin:	Date End:
Casing Height:	Land Surface Elevation:			
Lat.:	Long.:	Drilled By: Graham & Currie	Static Water Level:	
Grid Coord.:	Logged By: Ben Hope	Development Method:		
Tests:	Drilling Method: Air Rotary	Sampling Method:		
Grout: 5% bentonite 0-52 ft	Seal: 47-52 ft	Gravel Pack: FX 50 sand 40-75 ft		
Casing Type: Sch 40 PVC	Diameter: 2"	Depth: 0-45 ft	Hole Dia.: 6"	
Screen Type: Sch 40 PVC	Diameter: 2"	Slot: 0.010-inch	Depth: 55-75 ft	Total Depth: 75 ft
PID/FID Reading (ppm)	Penetration Resistance	Depth (ft)	Lithology/Remarks	Well Completion
		0	0 - 10.0 ft: Light Tan Silty Fine Sand	0
		10	10.0 - 20.0 ft: Light Gray Silty Fine Sand	10
		20	20.0 - 70.0 ft: Bedrock Sampled as Gray Silty Coarse Sand with Rock Fragments Abundant	20
		30		30
		40		40
		50		50
		60		60
			Grout (0 - 47 ft)	
			Bentonite (47 - 52 ft)	
			Casing to 55 ft	

Ecological Services, Inc

c:\123r34\0675mw5b.wk3

State of North Carolina
Department of Environment,
Health and Natural Resources
Winston-Salem Regional Office

James B. Hunt, Jr., Governor
Jonathan B. Howes, Secretary
Leesha Fuller, Regional Manager



November 7, 1994

Mr. Larry A. Griffin
North Mecklenburg Landfill
15300 Holbrooks Road
Huntersville, NC 28078

Subject: North Mecklenburg Construction and Demolition Landfill
Permit #60-13
Technical Review Letter

Dear Mr. Griffin:

The Solid Waste Section has conducted an engineering review of the documents submitted in support of the request to expand the subject facility. The following comments must be addressed in order to continue the review of this project:

1. Hydrogeological considerations have been addressed by others in our Section; See attached memorandum. For further discussion or clarification of these comments, please contact Jim Bateson in our Raleigh office at (919) 733-0692.
2. The topographic map (dated 5-26-94) of existing conditions at the site should show soil boring and monitoring well locations. Reference Rule .0504(2)(a).
3. The grading plan should reflect existing contours that were obtained from the May 26, 1994 photography. The plan as submitted 8-30-94 apparently utilizes topographic data from 1988. This plan should also show a buffer distance of 500 feet from the Council well, as discussed, and should reflect a minimum four (4) foot vertical separation between excavated elevations and groundwater or consolidated rock. Reference Rule .0504(2)(b), .0503(2)(f)(ii), and .0503(2)(d)(ii).
4. The cross sections need revision to reflect changes made in the plans as a result of Comments No. 2 and 3 above. Ground surface elevations, proposed excavation elevations, final elevations, groundwater and bedrock level, and boring information should be shown, preferably on a grid to allow for accurate measurements. [Reference Rule .0504(2)(f)]

See ESI Report Attached

See Rev. Topo Sheet.

See Rev. Sht. 11, 12

FINAL
COMMENTS
GRADING

See Rev. Sht. 14 and
Sht. 12, Table 5
"Groundwater Elev."

30' ID CONTAINER

4.6 TONS

Page Two
Mr. Griffin
7 Nov 94

See "Operating Procedures"
for the following references:

See Para. 12a. Less than 5. Site development in five year phases, and cell progression within each phase should
2.16 yrs, left at be shown on a drawing. The operations plan references a drawing entitled "Plan of
assumed rate of fill. Development Phases", but I am unable to locate such a drawing. Reference Rule
.0504(2)(g) and (h)(v).

6. Rule .0504(2)(h) requires a written report which contains several different items. The
following items are inadequately addressed:

- | | | |
|---------------------|------|---|
| Para 12b.... | iii) | Projected use of landfill after completion; |
| 12a.... | iv) | Anticipated lifetime of project; |
| See Below ... | v) | Description of systematic usage of area, operation, orderly development, and
completion of landfill-See Comment No. 7 on the operations plan; |
| Attached Seperate.. | vi) | Earthwork calculations-will need revision after changes in the grading plan; |
| Para. 14.... | x) | A discussion of compliance with design requirements in Rule .0503(2)-
specifically item (a). It should be noted that although the rules do not specify
a monitoring interval for explosive gases at these types of facilities, the
standards found in .0503(2)(a) do apply to this facility. Monitoring frequency
is to be determined by the operator's professional judgment. This could
possibly be addressed in the operations plan for the facility. |

In "Operating Procedures:" 7. The following comments refer to the Operations Plan submitted October 10, 1994.

- | | | |
|-------------|----|---|
| See 3a..... | a) | Item 3(a) should specify that the material proposed for cover is soil, unless
some alternative material is being proposed. |
| 3b..... | b) | Item 3(b) should specify that one (1) foot of interim cover is required. |
| 3d..... | c) | Item 3(c) is inadequate for a final cover design. We suggest that Rule
.1627(c)(1)(A)-(C) be referenced. |
| 6a..... | d) | Item 6(a): Substitute "final cover" for "2 ft. fill". |
| 7a..... | e) | Item 7(a): Delete "unless otherwise specified by DEHNR...permit." |
| 9c..... | f) | Item 9(c): Delete "without written permission from DEHNR, Solid Waste
Div." Written permission will not be given for this facility to accept hazardous
or liquid waste. |

See Exhibit "A" Attached g) Item 10 should be expanded. For example, a plan should be developed clearly
outlining measures to be taken in case of a landfill fire, or the receipt of a
burning load of waste. Items 10(b) and (d) seem to imply that fire-fighting
capabilities rely solely on the use of water, so please note when developing
more detailed fire-fighting instructions for your landfill staff that the use of
water should be minimized when fighting a fire at an unlined land disposal
facility. Other issues that need attention are worker safety (for daily
operations as well as emergency situations), and operator training.

Page Three
Mr. Griffin
7 Nov 94

See Seperate Sheets
Plan & Cross Sect.
Marked up with red
and Yellow Highlighter.

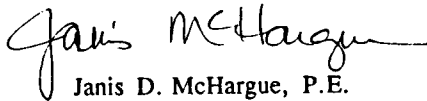
8. In response to your consultant's letter of October 31, 1994, regarding disposal of land clearing debris, more information is needed. Areas within the buffer that are proposed for disposal of land clearing debris should be delineated on the plans. These proposed disposal areas must be at least 100 feet from the property line as required by Rule .0564(9)(b), and must not interfere with the monitoring plan for the C&D landfill in any way. This matter will be considered further after the specific locations proposed for disposal are indicated on the plans.

Two new sets of inserts
included in seperate
envelopes for notebook.

One additional comment concerns the format of submittals to the Section. It is helpful for all submittals to be made in the same format to allow for easy incorporation of revisions into the package. For instance, if an application is originally submitted in a three ring binder, additional or replacement sheets and pockets containing drawings can easily be placed into the binder. Receiving a variety of notebooks, folders, and loose sheets makes the review more difficult and adds to the processing time. Further, because of the complexity of this project and the numerous revisions, be advised that two copies of revisions will suffice until the package is approved, at which time we will request additional complete copies of the application.

These comments are intended to expedite the review of this project, and in no way do they restrict the Section's right to request additional information after further review. For clarification or discussion of these issues, please contact me at (910) 896-7007.

Sincerely,



Janis D. McHargue, P.E.
Western Area Engineer
Solid Waste Section

cc: Jim Coffey
Julian Foscue
Frank Hicks✓

Rick Doby
Central Files
Ron Gilkerson

4



To: Jan McHarg

From: Jim Bateson

RE: North Mecklenburg C&D Phase II Construction Plan Application;
Hydrogeological Considerations.

Date: October 28, 1994

The proposed grading limits are well below the existing water table. The grading plan of 8/30/94, prepared by Frank B. Hicks Associates, Inc., shows the floor of the excavation to be at 676 feet, almost 18 feet below water level in monitoring well MW-3. Section .0505(7)(a) of Title 15A NCAC 13B requires a 4 foot vertical separation between waste and water table. This should be brought to the attention of the owner and Frank B. Hicks Associates as they redesign the grading plan to accomodate the 500 foot buffer around the Council well.

ESI must provide a better estimate of long-term seasonal high water table levels for the site. This was not addressed in any of their reports. They could collect more well data, or extrapolate from their existing levels with the aid of climatological data for the area. Without a better estimate of *long-term* seasonal high water table, DEHNR will require a vertical separation greater than four feet between grading limits and the currently estimated ground water level.

To better assess the monitoring plan, we need better characterization of hydraulic conductivity of the various hydrogeological units. Permeability of saprolite was adequately determined by laboratory analyses of two undisturbed samples from soil borings. Only one estimate of bedrock conductivity was obtained, via slug test of PZ-7. We would like to request at least one more in-situ determination of hydraulic conductivity in bedrock. Slug tests could be performed on any of wells MW-6, MW-7, MW-8, or PZ-1, for example, as they are screened at depths well into the unoxidized zone.

Conductivity of partially weathered rock in the transition zone between saprolite and bedrock has not been characterized. A slug test performed on temporary monitoring well TW-2 in the Phase I tract, reported in ESI's hydrogeological assesement of 6/18/92, may partially address this need. The hydraulic conductivity estimate given for TW-2 is higher than any of the other conductivity estimates reported for the site by ESI. Logs of nearby soil borings suggest that this well was screened in partially weathered rock. It is reasonable to expect that the transition from partially weathered rock to bedrock provides the most hydraulically conductive horizon on the site. Since no lithologic logs for TW-2 were made available to us, we should request at least two more in-situ determinations of hydraulic conductivity on partially weathered rock. Slug tests on any of wells MW-9, MW-10, PZ-3, or PZ-4 would suffice.

JTB memo; p.2

We need lithologic logs and well construction data for MW-2, MW-3, MW-4, and MW-5 to assess the monitoring plan. Once sufficient hydraulic conductivity data is available to estimate the most permeable horizon on the site, I will use all the well records to check whether enough of the existing monitoring wells are screened within that horizon. Also, data from the above four wells may indicate that they are the best sites for the extra slug tests requested above.

Monitoring wells MW-2 and MW-3 will need replacement if abandoned during construction. DEHNR will require at least one monitoring well in the area between the lowest part of the pit and Cane Creek, near the current site of MW-2.

All temporary monitoring wells and piezometers on the site must be properly abandoned. Those wells with native backfill in the annular space should be drilled out and filled with cement grout, as specified in 15A NCAC subchapter 2C section .0113.

State of North Carolina
Department of Environment,
Health and Natural Resources
Winston-Salem Regional Office

James B. Hunt, Jr., Governor
Jonathan B. Howes, Secretary
Leesha Fuller, Regional Manager



October 7, 1994

Mr. Larry A. Griffin
North Mecklenburg Landfill
15300 Holbrooks Road
Huntersville, NC 28078

Subject: North Mecklenburg Construction and Demolition Landfill
~~Permit #60-48~~
Review of Expansion Request

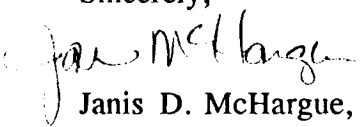
Dear Mr. Griffin:

As you know, the Section is currently reviewing your application for Phase II of the referenced facility. The presence of a water supply well located within 500 feet of the proposed waste boundary has been an issue of concern, since the Solid Waste Management Rules require a 500 foot separation between wells and disposal areas.

After reviewing the situation, and consulting with other agencies, the Section would like to make you aware of its position regarding this matter. Even though site suitability has been given to the 42.77 acre site as described in Document 3 of the approved plan, a permit to construct (allowing disposal in Phase II) can only be issued for areas within this tract that meet the 500 foot buffer requirement.

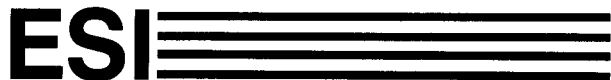
Please be advised that our review is ongoing, and other technical issues may arise which could involve modifications to the plans. However, because this particular issue has the potential to significantly affect your facility, the Section wanted to make you aware of our position on this matter as soon as possible. Please contact me at (910) 896-7007 if you desire further discussion on this matter.

Sincerely,


Janis D. McHargue, P.E.
Western Area Engineer
Solid Waste Section

cc: Jim Coffey
Julian Foscue

Rick Doby
Central Files



ECOLOGICAL SERVICES, INC.

P.O. Box 12146, Charlotte, North Carolina 28220



October 3, 1994

Ms. Janis D. McHargue
North Carolina Department of Health,
Environment and Natural Resources
8025 North Point Blvd., Suite 100
Winston-Salem, North Carolina 27106

Subject: Well Abandonment Record
North Mecklenburg Landfill
Huntersville, North Carolina

Dear Ms. McHargue:

Attached, please find well abandonment records for three temporary piezometers located at the North Mecklenburg Landfill in Huntersville, North Carolina. Each piezometer was abandoned on September 27, 1994 in accordance with North Carolina Department of Environment, Health, and Natural Resources Guidelines.

Please feel free to contact me if you have any questions regarding this submittal.

Sincerely,

ECOLOGICAL SERVICES, INC.

Paul A. Banks
Project Geologist

cc: Mr. Larry Griffin, Sr.

North Carolina
Department of Environment, Health, & Natural Resources
Division of Environmental Management
Groundwater Section
P.O. Box 29535 - Raleigh, N.C. 27626-0535

WELL ABANDONMENT RECORD

CONTRACTOR ECOLOGICAL SERVICES, INC

REG. NO. _____

1. WELL LOCATION: (Show a sketch of the location on back of form.)

Nearest Town: HUNTERSVILLE NC

County MECKLENBURG

HOLBROOK ROAD

(Road, Community, Subdivision, Lot No.)

Quadrangle No. _____

2. OWNER: LARRY GRIFFIN SR.

3. ADDRESS: 15800 HOLBROOK ROAD
HUNTERSVILLE, NC

4. TOPOGRAPHY: draw slope hilltop, valley, flat

5. USE OF WELL: TEMP. MONITOR DATE: 9-27-94

6. TOTAL DEPTH: 85' DIAMETER: 2"

7. CASING REMOVED:

feet	diameter
<u>RISER 65'</u>	<u>2"</u>
<u>SCREEN 20'</u>	<u>2"</u>

8. SEALING MATERIAL:

<u>Neat cement</u>	<u>Sand cement</u>
bags of cement <u>85</u>	bags of cement _____
gals. of water <u>37</u>	yds. of sand _____
	gals. of water _____

Other

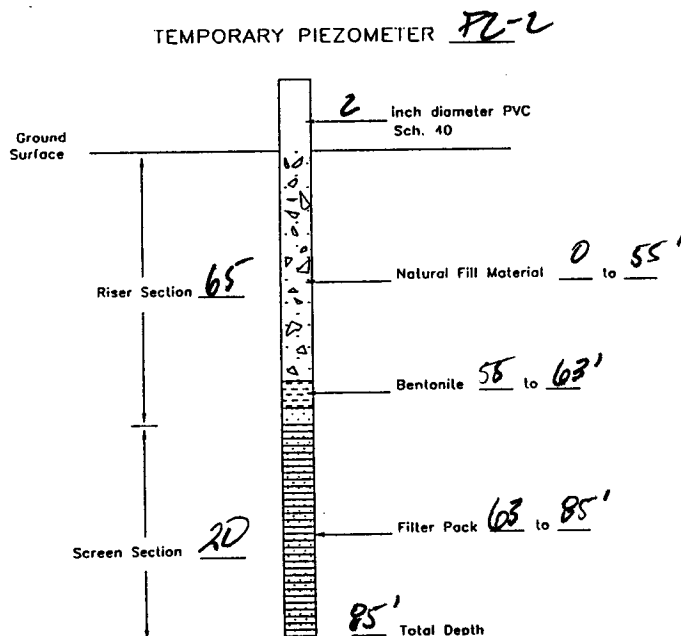
Type material _____

Amount _____

9. EXPLAIN METHOD EMPLACEMENT OF MATERIAL.

TREMIE CAULK

WELL DIAGRAM: Draw a detailed sketch of the well showing total depth, depth and diameter of screens remaining in the well, gravel interval, intervals of casing perforations, and depths and types of fill materials used.



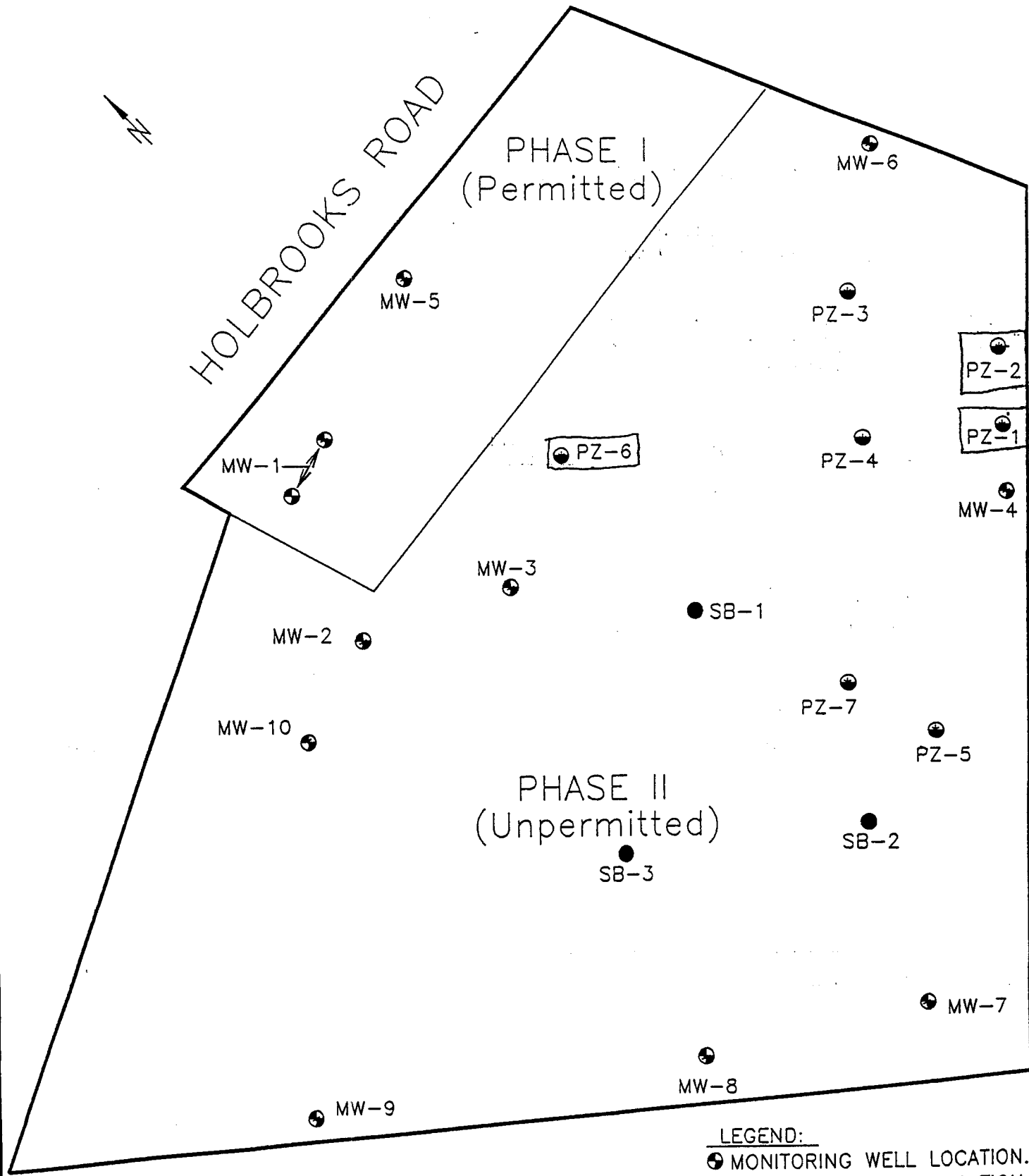
I do hereby certify that this well abandonment record is true and exact.

Signature of Contractor or Agent [Signature]

Date 10-3-94

WELL LOCATION: Draw a location sketch on the reverse of this sheet, showing the direction and distance of the well to at least two (2) nearby reference points such as roads, intersections and streams. Identify roads with State Highway road identification numbers.

Submit original to the Division of Environmental Management, one copy to the Driller, and one copy to the owner.



LEGEND:

- MONITORING WELL LOCATION.
- PIEZOMETER WELL LOCATION.

DATE: 07-05-94
SCALE: 1" = 200'
DWG. NO.: ES-675-2

ESI

FIGURE 2: SITE CONFIGURATION
MAP
N. MECK. LANDFILL
HUNTERSVILLE, NC

North Carolina
Department of Environment, Health, & Natural Resources
Division of Environmental Management
Groundwater Section
P.O. Box 29535 - Raleigh, N.C. 27626-0535

WELL ABANDONMENT RECORD

CONTRACTOR ECOLOGICAL SERVICES, INC

REG. NO. _____

1. WELL LOCATION: (Show a sketch of the location on back of form.)

Nearest Town: HUNTERSVILLE NC

County MECKLENBURG

HOLEBROOKS ROAD

(Road, Community, Subdivision, Lot No.)

Quadrangle No. _____

2. OWNER: CARRY GRIFFIN SR

15800 HOLEBROOKS RD.

3. ADDRESS: HUNTERSVILLE NC

4. TOPOGRAPHY: draw, Slope, hilltop, valley, flat

5. USE OF WELL: TEMP. MONITOR DATE: 9-27-94

6. TOTAL DEPTH: 20' DIAMETER: 2"

7. CASING REMOVED:

	feet	diameter
<u>RISER</u>	<u>10'</u>	<u>2"</u>
<u>SCREEN</u>	<u>10'</u>	<u>2"</u>

8. SEALING MATERIAL:

<u>Neat cement</u>	<u>Sand cement</u>
bags of cement <u>1</u>	bags of cement _____
gals. of water <u>6.5</u>	yds. of sand _____
	gals. of water _____

Other

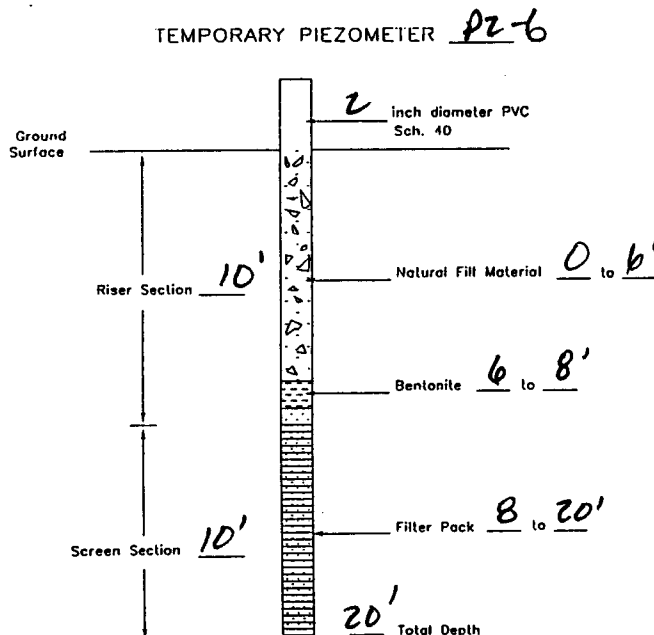
Type material _____

Amount _____

9. EXPLAIN METHOD EMPLACEMENT OF MATERIAL.

TREMIE GROUT

WELL DIAGRAM: Draw a detailed sketch of the well showing total depth, depth and diameter of screens remaining in the well, gravel interval, intervals of casing perforations, and depths and types of fill materials used.



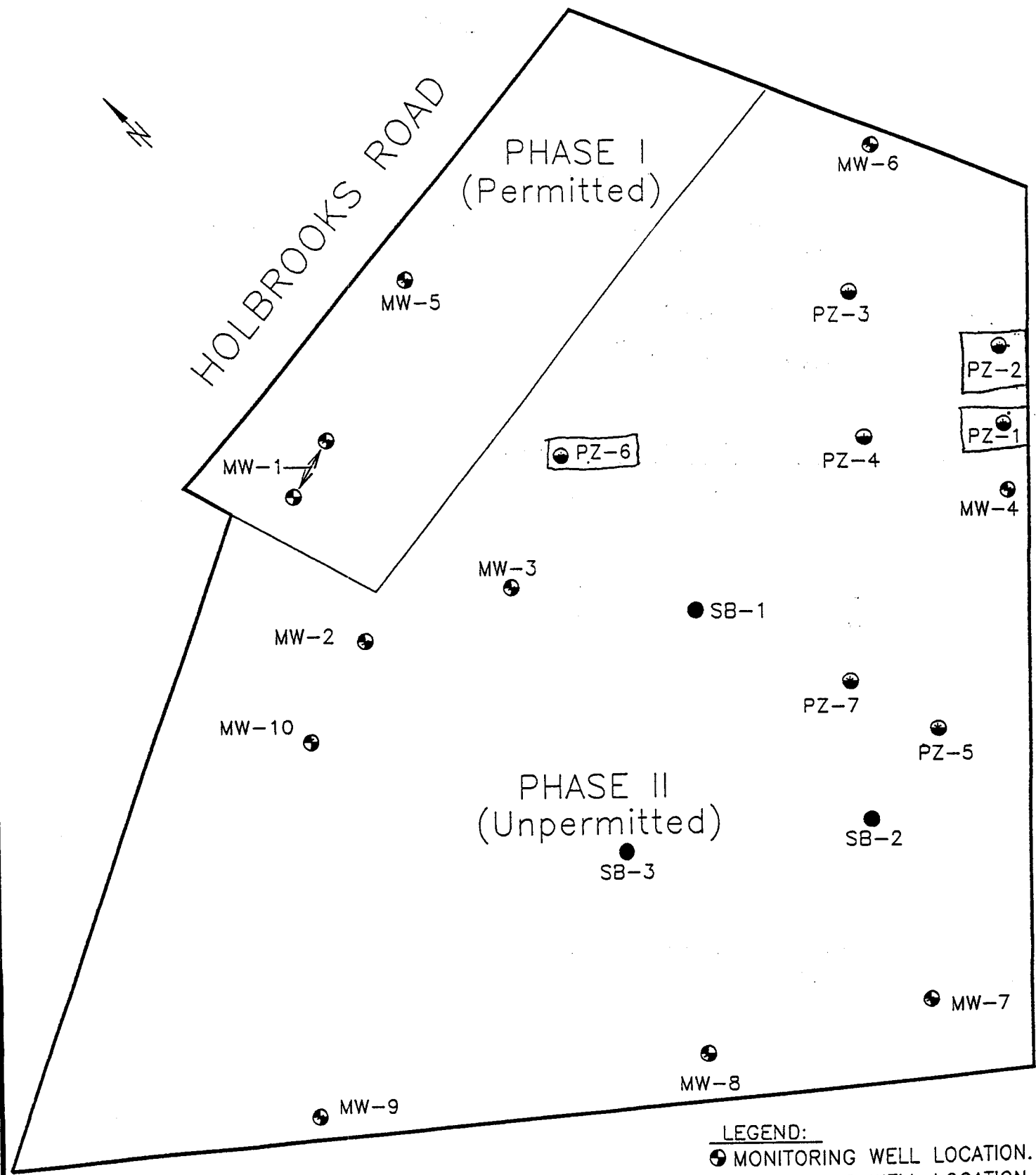
I do hereby certify that this well abandonment record is true and exact.

Signature of Contractor or Agent Paul A. Bell

Date 10-3-94

WELL LOCATION: Draw a location sketch on the reverse of this sheet, showing the direction and distance of the well to at least two (2) nearby reference points such as roads, intersections and streams. Identify roads with State Highway road identification numbers.

Submit original to the Division of Environmental Management, one copy to the Driller, and one copy to the owner.



DATE: 07-05-94
 SCALE: 1" = 200'
 DWG. NO.: ES-675-2

ESI

FIGURE 2: SITE CONFIGURATION
 MAP
 N. MECK. LANDFILL
 HUNTERSVILLE, NC

North Carolina
Department of Environment, Health, & Natural Resources
Division of Environmental Management
Groundwater Section
P.O. Box 29535 - Raleigh, N.C. 27626-0535

WELL ABANDONMENT RECORD

CONTRACTOR ECOLOGICAL SERVICES, INC

REG. NO. _____

1. WELL LOCATION: (Show a sketch of the location on back of form.)

Nearest Town: HUNTERSVILLE, NC

County MECKLENBURG

HARBROOKS ROAD

(Road, Community, Subdivision, Lot No.)

Quadrangle No. _____

2. OWNER: LARRY GRIFFIN SR.

3. ADDRESS: 15300 HARBROOKS RD

HUNTERSVILLE, NC

4. TOPOGRAPHY: draw Slope hilltop, valley, flat

5. USE OF WELL: TEMP. MONITOR DATE: 9-27-94

6. TOTAL DEPTH: 47' DIAMETER: 2"

7. CASING REMOVED:

	feet	diameter
<u>RISER</u>	<u>37'</u>	<u>2"</u>
<u>SCREEN</u>	<u>10'</u>	<u>2"</u>

8. SEALING MATERIAL:

<u>Neat cement</u>	<u>Sand cement</u>
bags of cement <u>2</u>	bags of cement _____
gals. of water <u>15.5</u>	yds. of sand _____
	gals. of water _____

Other

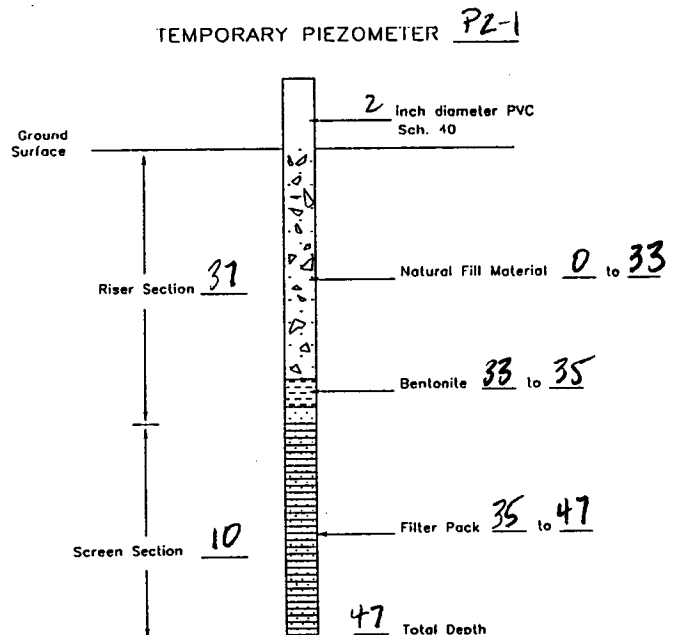
Type material _____

Amount _____

9. EXPLAIN METHOD EMPLACEMENT OF MATERIAL.

TREMIE GROUT

WELL DIAGRAM: Draw a detailed sketch of the well showing total depth, depth and diameter of screens remaining in the well, gravel interval, intervals of casing perforations, and depths and types of fill materials used.



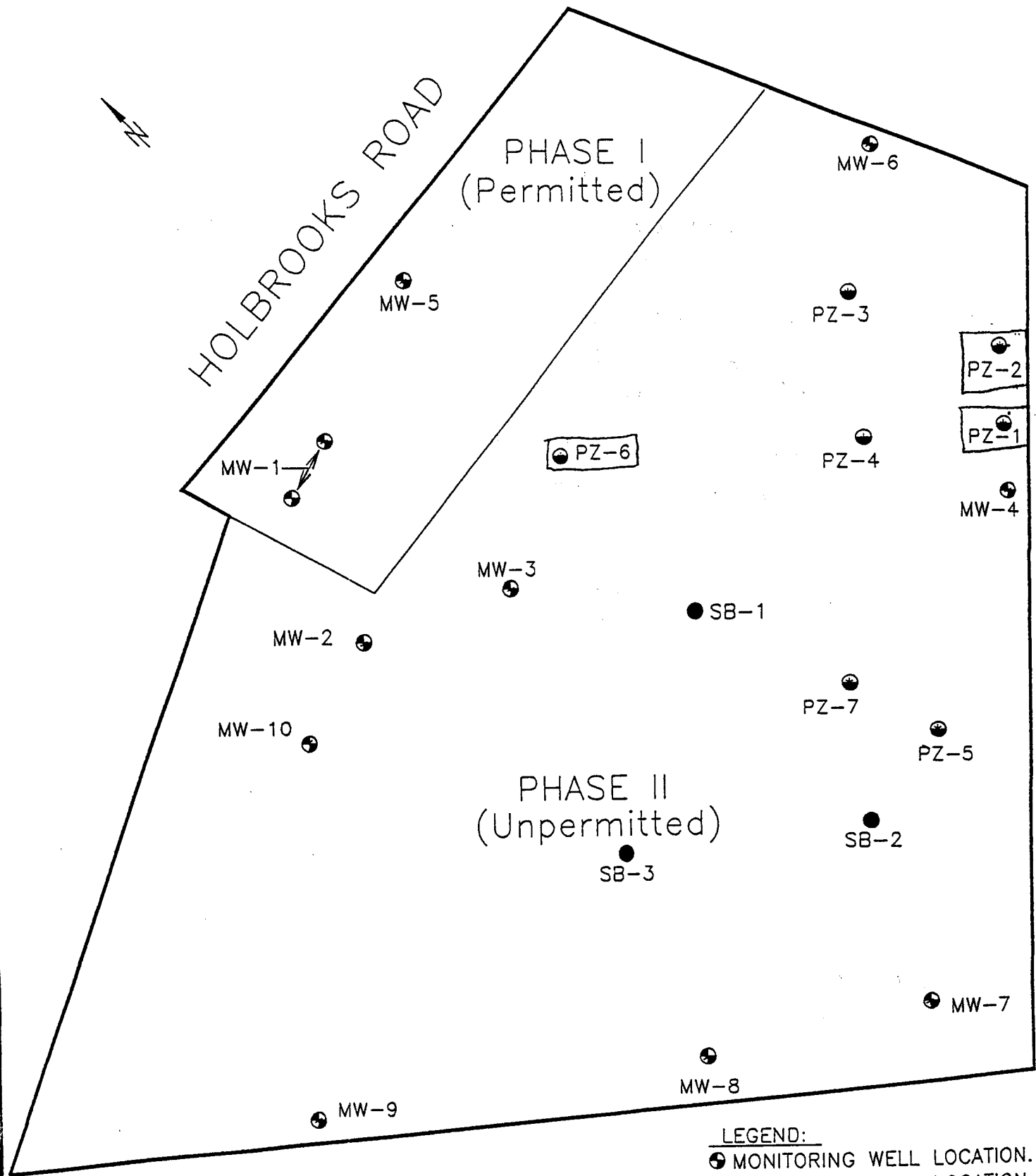
I do hereby certify that this well abandonment record is true and exact.

Signature of Contractor or Agent Paul A. Bell

Date 10-3-94

WELL LOCATION: Draw a location sketch on the reverse of this sheet, showing the direction and distance of the well to at least two (2) nearby reference points such as roads, intersections and streams. Identify roads with State Highway road identification numbers.

Submit original to the Division of Environmental Management, one copy to the Driller, and one copy to the owner.



DATE: 07-05-94
 SCALE: 1" = 200'
 DWG. NO.: ES-675-2

ESI

FIGURE 2: SITE CONFIGURATION
 MAP
 N. MECK. LANDFILL
 HUNTERSVILLE, NC



MECKLENBURG COUNTY
Engineering Department

August 23, 1994

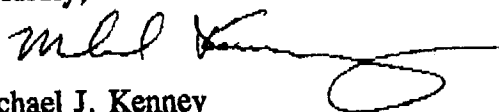
Mr. Frank B. Hicks
1817 Wedgedale Dr.
Charlotte, NC 28210

Re: N. Mecklenburg Landfill Phase II

Dear Frank:

I have reviewed your revisions to North Mecklenburg Landfill (formerly P&P Landfill) off Holbrooks Road in Huntersville, and approved the erosion control. Since the initial Grading Permit #1141 was issued 8/30/88, just inform Ted Fortner, our inspector for the area, and enlarge the filter basins as approved on the plans. If you have any additional questions or require further assistance please feel free to call me at 336-3735.

Sincerely,


Michael J. Kenney
Land Development Manager

cc: Ted Fortner

COPY FOR
PERMITTING
FILE

State of North Carolina

Department of Environment, Health, and Natural Resources
Division of Solid Waste Management and Office of Waste Reduction
P.O. Box 27687 Raleigh, NC 27611

CONSTRUCTION AND DEMOLITION LANDFILL ANNUAL REPORT

FOR THE PERIOD OF JULY 1, 1993-JUNE 30, 1994

Separate surveys will be sent to all counties and cities to gather information about other components of solid waste management programs in North Carolina.

For questions or assistance in completing this report, contact your Regional Waste Management Specialist.

Completed forms must be returned to your Regional Waste Management Specialist:

Richard Doby
919 North Main Street
Mooresville, NC 28115 (704)663-1699

A copy of this report must be sent to the county manager of each county from which waste was received.

Name: NORTH MECKLENBURG LF Permit Number: 6013

Address: 1545 W. TRADE STREET CHARLOTTE, NC 28216

Facility Contact Person: LARRY GRIFFIN

Phone Number of Contact Person: (704)875-3367

Fax: 704/875-3358

Date Facility Began Receiving Waste: 9-01-93 Date Facility Expected to Close:

Tipping Fee \$15.00 Per Ton (Attach a schedule of tipping fees if appropriate.)

1. Total waste landfilled at this facility during the period of July 1, 1993, through June 30, 1994. Indicate below tonnage received by county of waste origin.

(Photocopy the Table and use when waste is received at this landfill from more than three counties.)

MONTH	TONS FROM <i>Mecklenburg</i> COUNTY	TONS FROM COUNTY	TONS FROM COUNTY	TOTAL
July				
August				
September	12,687.27			
October	11,320.73			
November	9,613.33			
December	7,373.17			
January	4,682.22			
February	9,047.29			
March	11,557.46			
April	13,870.11			
May	15,873.89			
June	14,855.86			
TOTAL	110,881.33			

DIVISION OF ENVIRONMENTAL

August 22, 1994



MEMORANDUM TO: Janis McHargue
Western Area Engineer, Solid Waste Section
Winston-Salem Regional Office

FROM: Paul R. Dahlen *RD*

THROUGH: Barbara Christian *MC*

SUBJECT: Robert Council Well adjacent to North Mecklenburg
Landfill, Huntersville, NC

I inspected this well on August 22, 1994 to ensure that its construction and maintenance were in compliance with 15A NCAC 2C. A possible violation noted was the distance between the landfill boundary and the well, which is what prompted your office to request this inspection (see your memo to Barbara Christian, dated May 16, 1994). From my telephone conversation with you and my conversations with Mr. Council, these are the facts as I understand them:

1. There is a two-part process to permitting sanitary landfills: an initial "site suitability" portion which applies to the entire site, followed by specific "permits to construct" for each phased plot of the landfill. These plots are scheduled to be phased in every 5 years.
2. At the time Mr. Council had his well drilled (August, 1993), the North Mecklenburg Landfill had been issued the site suitability portion of the permit for the entire landfill site and the permit to construct for an initial 8 acre plot (June, 1993).
3. A permit to construct has not been issued for any land beyond the initial 8 acre plot.
4. Mr. Council contends that his well was drilled more than 500 feet away from the 8 acres that were permitted for construction, and that this was the only valid permit at the time his well was constructed.
5. If sanitary landfilling is to proceed to within 75 feet of the present boundary that separates the Council property from the Landfill property, I didn't see any location on Mr. Council's property that a well could be constructed such that a 500 foot buffer would separate it from the landfill. Much of Mr. Council's property is undeveloped woodland on sloping terrain.

Robert Council Well Memo
Page Two

According to 15A NCAC 2C .0107 (a)(2)(J) and (K), the minimum horizontal separation between a well and a sanitary landfill shall be 500 feet, and the minimum horizontal distance between a well and a non-hazardous solid waste landfill shall be 100 feet. I am not sure whether the area in question was a sanitary landfill, a non-hazardous solid waste landfill, or any type of landfill at all when the well was drilled. I would need written clarification from your office concerning this point before I could take any action against the driller.

During the Council well inspection, I observed 2 monitor wells on the landfill property that had not been grouted or completed. One of these monitor wells was located in the middle of a body of standing water left from recent rains. Neither well had an identification plate. Mr. Council stated that these wells had been drilled in the fall of 1993. These wells are in violation of 15A NCAC 2C .0108 (c)(1)(D), (F), and (K). Please make Mr. Griffin aware that construction of these wells must be completed in accordance with the standards cited above.

If you have any questions concerning this memo, please contact me at (704) 663-1699 ext. 240

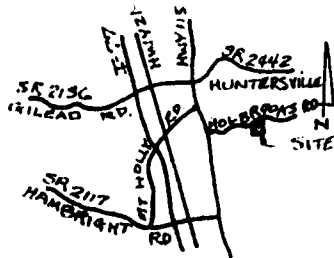
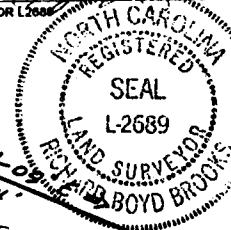
*Spoke
to John Gibson
9/16/94*

THIS IS TO CERTIFY THAT ON THE 16TH DAY OF OCTOBER 1992, I SURVEYED THE PROPERTY SHOWN ON THIS PLAT, AND THAT THE PROPERTY LINES, WALLS AND BUILDINGS ARE AS SHOWN HEREON THAT THE BUILDINGS LOCATED ON SAID LOT DO NOT ENCROACH OR PROJECT ON ADJACENT STREETS OR PROPERTY AND THAT NO ADJACENT BUILDINGS OR WALLS ENCROACH OR PROJECT ON SAID PREMISES.

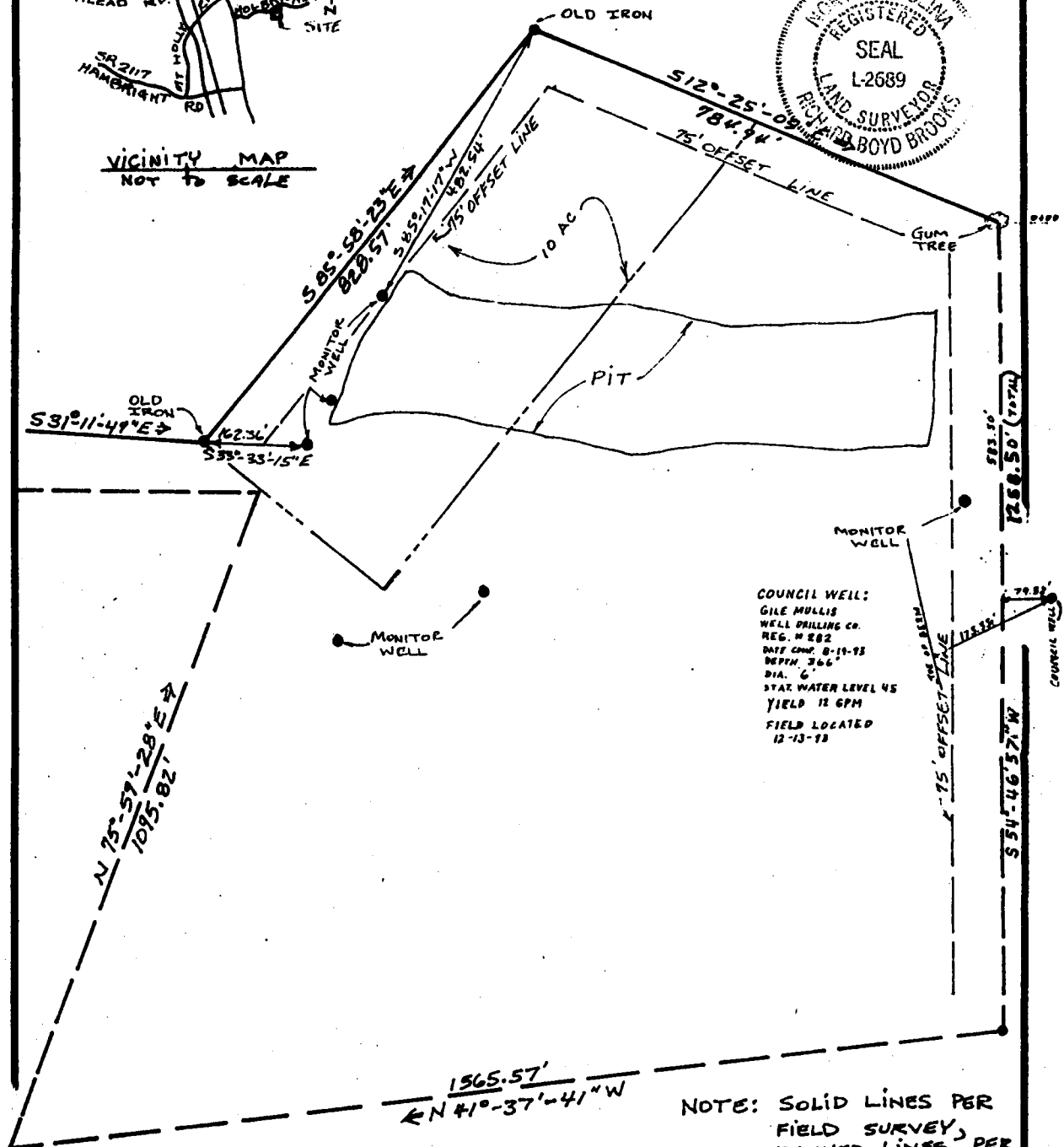
RICHARD BOYD BROOKS

1200 JENKINS DR
CHARLOTTE, NC 28212
704-568-1719

SIGNED [Signature]
N.C. REGISTERED SURVEYOR L2689



VICINITY MAP
NOT TO SCALE



COUNCIL WELL:
GILE MULLIS
WELL DRILLING CO.
REG. # 282
DATE COM. 8-19-93
DEPTH 366'
DIA. 6'
STAT. WATER LEVEL 45
YIELD 15 GPM
FIELD LOCATED
12-13-93

NOTE: SOLID LINES PER
FIELD SURVEY,
DASHED LINES PER
DEED.

MAP
OF
WELL LOCATION SE PIT LOCATION
HUNTERSVILLE, MECKLENBURG COUNTY, N.C.
PROPERTY OF
LARRY GRIFFIN

SCALE 1" = 200' DEED RECORDED 5992-0372 MAP RECORDED _____
FIELD BOOK _____ JOB NO. 92429 THIS PLAT DOES NOT CONFORM TO GS47-39

SUBJECT TO UNDERGROUND UTILITIES, AREA BY D.M.D. METHOD OF AREA COMPUTATION, UPDATED _____
• = OLD IRON (E.I.P.) O = NEW IRON (N.I.P.) NPS = NO POINT SET



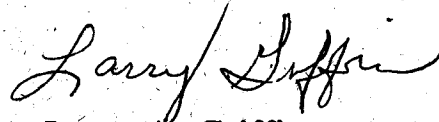
9
August 4, 1994

State of North Carolina
Department of Environment, Health, and
Natural Resources
Division of Solid Waste Management and Office
of Waste Reduction
P O Box 27687
Raleigh, NC 27611

From September 1993 thru February 15, 1994 our prices
were per load -

From February 16, 1994 thru June 1994 our price
was \$15.00 per ton -

In this tonnage, there is approximately 25,000 tons of Land Clearing-


Larry A. Griffin
President

State of North Carolina
Department of Environment,
Health and Natural Resources
Winston-Salem Regional Office

James B. Hunt, Jr., Governor
Jonathan B. Howes, Secretary
Leesha Fuller, Regional Manager



May 16, 1994

MEMORANDUM

TO: Barbara Christian
Supervisor, Groundwater Section
Mooresville Regional Office

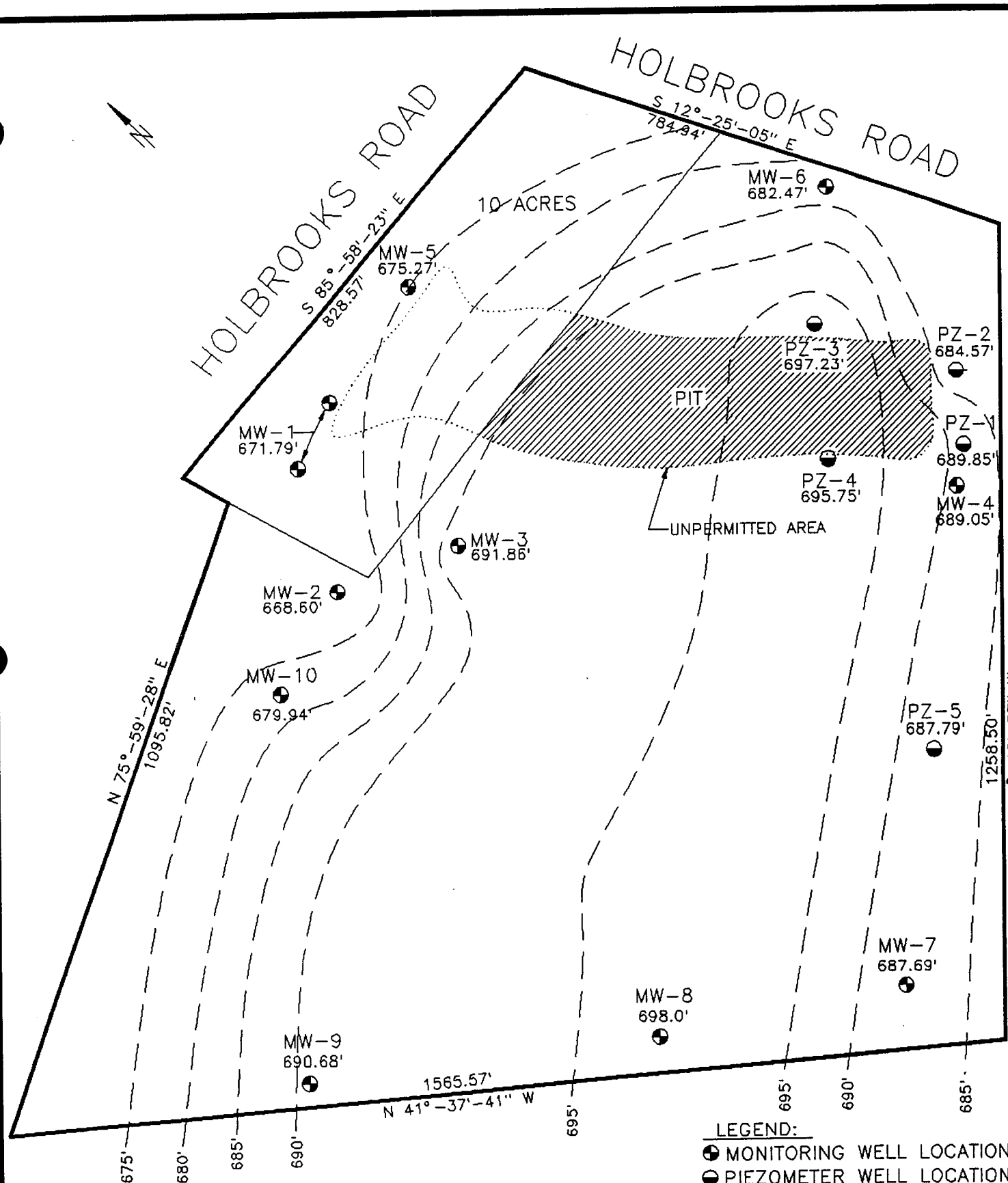
FROM: Janis McHargue
Western Area Engineer, Solid Waste Section
Winston-Salem Regional Office

SUBJECT: Private Well on Property Adjacent to North Mecklenburg
Landfill; Huntersville, NC

I am writing to confirm our telephone conversation of today's date, and to notify your office of the existence of a private water supply well that is located approximately 79 feet from the facility boundary of a permitted sanitary landfill. The circumstances surrounding this well, as I understand them, are described below:

1. The landfill was permitted as a sanitary landfill (for construction and demolition waste) by our Section on June 24, 1993. The owner/operator is:
Larry Griffin
North Mecklenburg Landfill
15300 Holbrooks Road
Huntersville, NC 28078
(704) 875-3367
2. A well was drilled on a parcel of land adjoining the landfill in August, 1993. This parcel is owned by Robert Council. The well was found to be 79.52 feet from the facility boundary on a survey that was completed on October 16, 1993. A copy of this plat is enclosed for your information.

The presence of this well is a complicating factor as our Section reviews Mr. Griffin's plans for an expansion to his facility; therefore, any assistance you could offer us in this matter would be appreciated. I do not have an address or phone number for Mr. Council, but I will ask Rick Doby (of our Section) to provide you with this if he has that information. I am also sending copies of some correspondence regarding this matter for your background information.



LEGEND:
 ● MONITORING WELL LOCATION.
 ○ PIEZOMETER WELL LOCATION.

DATE: 05-06-94
 SCALE: 1" = 200'
 DWG. NO.: ES-531-2

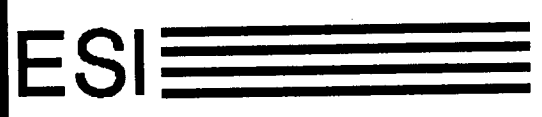


FIGURE 1: POTENTIOMETRIC SURFACE MAP.
 N. MECK. LANDFILL
 HUNTERVILLE, NC

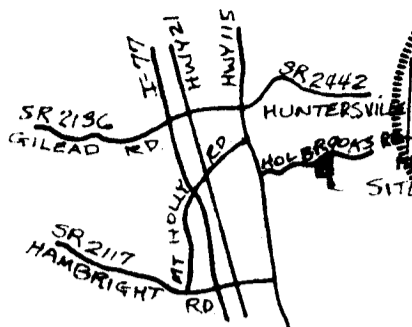
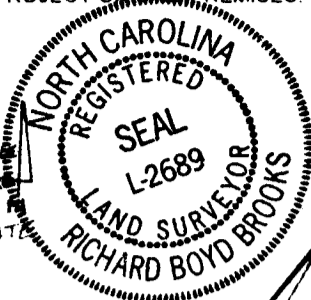
THIS IS TO CERTIFY THAT ON THE 16TH DAY OF OCTOBER 1993, I SURVEYED THE PROPERTY SHOWN ON THIS PLAT, AND THAT THE PROPERTY LINES, WALLS AND BUILDINGS ARE AS SHOWN HEREON THAT THE BUILDINGS LOCATED ON SAID LOT DO NOT ENCROACH OR PROJECT ON ADJACENT STREETS OR PROPERTY. AND THAT NO ADJACENT BUILDINGS OR WALLS ENCROACH OR PROJECT ON SAID PREMISES.

RICHARD BOYD BROOKS

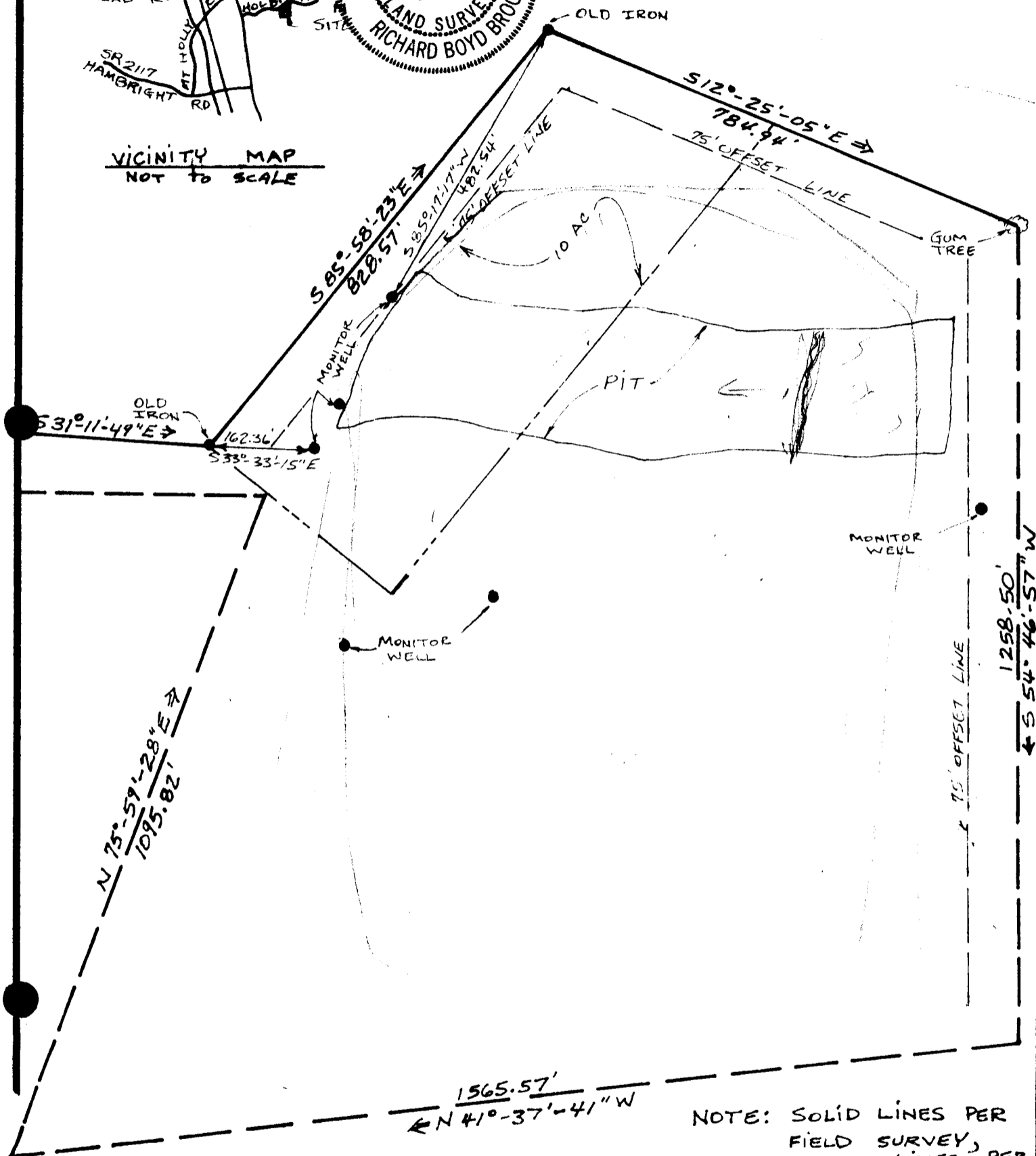
1200 JENKINS DR.
CHARLOTTE, NC 28212
704-568-1719

SIGNED

N.C. REGISTERED SURVEYOR L2689



VICINITY MAP
NOT TO SCALE



NOTE: SOLID LINES PER
FIELD SURVEY,
DASHED LINES PER
DEED.

MAP
OF

WELL LOCATION & PIT LOCATION

HUNTERSVILLE, MECKLENBURG COUNTY, N.C.

PROPERTY OF

LARRY GRIFFIN

SCALE 1" = 200' DEED RECORDED 5992-0372 MAP RECORDED _____

FIELD BOOK _____ JOB NO. 92429 THIS PLAT DOES NOT CONFORM TO GS47-30

*SUBJECT TO UNDERGROUND UTILITIES, AREA BY D.M.D. METHOD OF AREA COMPUTATION, UPDATED _____

• = OLD IRON (E.I.P.) O = NEW IRON (N.I.P.) NPS = NO POINT SET

12
MAR 15 1994

P.O. Box 12146, Charlotte, North Carolina 28220

Phone (704) 522-1111

Fax (704) 521-8004

March 8, 1994

Mr. Larry Griffin, Sr.
19141 Highway 73 West
Davidson, North Carolina 28036

Subject: Report of Hydrogeological Assessment (Unpermitted Area)
North Mecklenburg Landfill
15300 Holbrooks Road
Huntersville, North Carolina
ESI Project No. ES-0675

Dear Mr. Griffin:

Based on your authorization to proceed, Ecological Services, Inc. (ESI) has completed a hydrogeological assessment of the unpermitted area at the subject site. This assessment was performed in accordance with the requirements of the North Carolina Department of Environment, Health and Natural Resources (NCDEHNR), Division of Solid Waste Management, and more specifically, the requested information required by Mr. Julian M. Foscue, III, Western Area Supervisor, during our November 30, 1993, site meeting. This report describes the work performed and presents the results obtained along with our comments and conclusions.


We appreciate the opportunity to provide our environmental services on this project. Please do not hesitate to contact me if you have any questions.

Sincerely,

ECOLOGICAL SERVICES, INC.



Ronald C. Gilkerson
Vice President


Thomas H. Bolyard, P.G.
Senior Hydrogeologist

RCG/THB;krh
Enc(s)

cc: Janis D. McHargue
Western Area Engineer, NCDEHNR

Mr. Julian M. Foscue, III
Western Area Supervisor, NCDEHNR



HEALTH DEPARTMENT
ENVIRONMENTAL HEALTH DIVISION
700 NORTH TRYON STREET
CHARLOTTE, NC 28202
PHONE (704) 338-5102

FILE: 4799A
TC: 019-171-1470

Draw in and name all roads adjoining the property. Draw in and accurately dimension the lot concerned. Accurately indicate property boundaries, proposed and/or existing structures and driveways, underground utilities, and wells and springs within 100 feet of the proposed building or drainfield.

